

FIELD SAMPLING PLAN

**Falcon Refinery Superfund Site
Ingleside
San Patricio County, Texas
TXD 086 278 058**

Prepared for

**National Oil Recovery Corporation
3717 Bowne Street
Flushing, NY 11354**

Prepared by

**BNC Engineering, LLC.
607 River Bend Drive
Georgetown, Texas 78628**

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1.0 INTRODUCTION

The following Field Sampling Plan, prepared by BNC Engineering, LLC (BNC), on behalf of National Oil Recovery Corporation (NORCO) covers the procedures for collecting representative samples from 1) surface and sub-surface soil, 2) drums and aboveground storage tank contents and 3) potential asbestos containing material (PACM). All field sampling activities related to the removal action at the former Falcon Refinery site in San Patricio County, Texas will be performed in accordance with this plan.

2.0 SCOPE AND OBJECTIVES

The Field Sampling Plan provides sampling and characterization procedures for activities that may be performed during the execution of the work listed in the EPA Administrative Order on Consent for Removal Action. Including:

- Removal of above ground tanks, equipment and piping;
- Asbestos Inspection and possible abatement;
- Assessment of surface soil; and
- Removal of grossly contaminated soil.

3.0 FIELD PROCEDURES

This section describes the procedures that may be required as part of the field work to be performed at the site.

3.1 Surface Soil

3.1.1 Sample Event Preparation

General Event Preparation

The laboratory performing the sample analysis will supply all necessary coolers, pre-cleaned containers, trip blanks, chemical preservatives, labels, custody seals, chain-of-custody and shipping forms.

Sample Container Selection

Sample containers will be of a material compatible and non-reactive with the material it is to contain. Consult Table 1 to determine the number, type and volume of appropriate containers.

Sample Container Preparation

Sample containers will be purchased as a pre-cleaned product or cleaned in the laboratory in a manner consistent with EPA protocol.

Equipment Preparation Prior to Site Arrival

This section outlines the equipment preparation prior to site arrival for a specific sample collection

event. This equipment preparation includes minimum decontamination procedures for sampling devices.

- **Hand Sampling Tools** – Hand sampling tools will be cleaned with an Alconox® (or Liquinox®) low phosphate detergent solution and triple rinsed with distilled water prior to collecting each sample.

3.1.2 Soil Sample Collection

General Sample Collection Information

Representative soil samples will be collected for analysis. Evaluation of the sample may be based on visual observation, field screening or laboratory screening.

Equipment Decontamination Procedures

Soil sampling equipment will be cleaned with an Alconox® (or Liquinox®) low phosphate detergent solution and triple rinsed with distilled water prior to collecting each sample.

Sampling Equipment/Procedures

Surface soil samples will be retrieved using a spoon or trowel sampler to allow visual classification. Representative soil samples will be collected using clean sampling tools and placed in a sterile glass container equipped with a Teflon-lined lid furnished by the analytical laboratory. The container will be filled to capacity with soil to limit the amount of headspace present.

Sample Preservation

Each container will be labeled, placed on ice in an insulated cooler, and chilled to a temperature of approximately 40°F (4°C). Upon selection of samples for analysis, the cooler will be sealed for shipment to the laboratory.

3.2 Subsurface Soil

These procedures will be used for sampling of potentially affected subsurface soil and waste materials.

3.2.1 Sample Event Preparation

General Event Preparation

The laboratory performing the sample analysis will supply all necessary coolers, pre-cleaned containers, trip blanks, chemical preservatives, labels, custody seals, chain-of-custody and shipping forms.

Sample Container Selection

Sample containers will be constructed of a material compatible and non-reactive with the material

it is to contain.

Sample Container Preparation

Sample containers will be purchased as a pre-cleaned product or cleaned in the laboratory in a manner consistent with EPA protocol.

Equipment Preparation Prior to Site Arrival

This section outlines the equipment preparation prior to site arrival for a specific sample collection event. This equipment preparation includes minimum decontamination procedures for sampling devices.

- Hand Sampling Tools - Hand sampling tools will be cleaned with an Alconox® (or Liquinox®) low phosphate detergent solution and triple rinsed with distilled water prior to collecting each sample.
- Drilling/Push Probe Equipment - Drilling/Push Probe Equipment will be cleaned with an Alconox® (or Liquinox®) low phosphate detergent solution and rinsed with distilled water prior to initiating each boring.
- Drilling/Push Probe Sampling Equipment - Sampling tools will be cleaned with an Alconox® (or Liquinox®) low phosphate detergent solution and triple rinsed with distilled water prior to initiating each boring.

3.2.2 Soil Sample Collection

General Sample Collection Information

Representative soil samples will be collected for analysis. Evaluation of the sample may be based on visual observation, field screening or laboratory screening.

Equipment Decontamination Procedures

The soil sampling equipment will be cleaned with an Alconox® (or Liquinox®) detergent solution and triple rinsed with distilled water prior to initiating each boring or sample collection event.

Sampling Equipment/Procedures

Subsurface soil samples will be retrieved in a split spoon sampler or sample tube to allow visual classification. Representative soil samples will be divided into two separate portions using clean disposable gloves and clean sampling tools. One portion of the soil sample will be placed in a disposable sample bag. The other portion of the soil sample will be placed in a sterile glass container equipped with a Teflon-lined lid furnished by the analytical laboratory. The container will be filled to capacity with soil to limit the amount of headspace present.

Sample Preservation

Each container will be labeled, placed on ice in an insulated cooler, and chilled to a temperature of approximately 40°F (4°C). Upon selection of samples for analysis, the cooler will be sealed for shipment to the laboratory.

3.3 Aboveground Storage Tank (AST) Contents

Aboveground Storage Tanks located on-site will be gauged and sampled to characterize the material contained within them for disposal/recycle evaluation purposes. If confined space entry is required the protocol described in the BNC Health and Safety Plan (HSP) will be followed.

3.3.1 Sample Event Preparation

General Event Preparation

The laboratory performing the sample analysis will supply all necessary coolers, pre-cleaned containers, trip blanks, chemical preservatives, labels, custody seals, chain-of-custody and shipping forms.

Sample Container Selection

Sample containers need to be constructed of a material compatible and non-reactive with the material it is to contain.

Sample Container Preparation

Sample containers will be purchased as a pre-cleaned product or cleaned in the laboratory in a manner consistent with EPA protocol.

Equipment Preparation Prior to Site Arrival

This section outlines the equipment preparation prior to site arrival for a specific sample collection event. This equipment preparation includes minimum decontamination procedures for sampling devices.

- Hand Sampling Tools – Liquid samples taken from the ASTs will be collected using a COLIWASA or other sampling device that may be necessary if minimal liquid is detected in a tank. Sediment or sludge samples will be obtained using the same procedures described in the soil sampling portion of this plan.

3.3.2 AST Sample Collection

General Sample Collection Information

Representative composite samples will be collected for analysis.

Equipment Decontamination Procedures

The sampling apparatus will be cleaned with an Alconox® (or Liquinox®) low phosphate detergent solution and triple rinsed with distilled water prior to collecting each sample. Or a dedicated sampler will be used.

Sampling Equipment/Procedures

1. Caution will be exercised by BNC field investigators when sampling drums and ASTs due to the potential presence of explosive/flammable gases and/or toxic vapors. The following procedures will be used when collecting samples from drums and ASTs of unknown material.

Prior to sampling, all drums and ASTs will be visually inspected for the following:

- Pressurization (bulging/dimples);
- Presence of crystals around the opening;
- Leaks, holes and stains;
- Labels, markings;
- Composition and type;
- Condition, age, rust; and
- Sampling accessibility.

Level B protection will be employed during the following procedures.

2. Before sampling, each drum or AST will be grounded to the earth using grounding wires, alligator clips and a grounding rod.
3. The drum or AST opening equipment will contact the lid or bung to allow an electrical ground to form. The lid or bung will then carefully be removed.
4. Drums and ASTs will be screened for explosive gases or toxic vapors with an air monitoring instrument as the lid or bung is removed. Depending on the conditions, monitoring will be for one or more of the following:
 - Combustible gas;
 - Halogen vapors; and
 - Hydrogen sulfide gas

All relevant results, observations and information will be recorded in a logbook.

5. The appropriate sampling data will be selected based on the state of the material and the type of container. Selected equipment will be non-reactive and will meet the objectives of the sampling.
6. Sorbent Pads will be placed by the AST lids that will be sampled to contain any spill that may

occur during sampling.

Liquids—A COLIWASA will be lowered to the bottom of the drum or AST. The inner rod of the COLIWASA will be closed to create a vacuum and the device will be slowly removed from the drum or AST. The sample will be released to the appropriate sample container. The procedure will be repeated until a sufficient volume is obtained.

Solids/Semi-Solids—A push tube or auger will be used to obtain the sample. In all cases clean equipment will be used to obtain the sample and to place the sample into the appropriate container.

7. After sampling the drum or AST will be sealed, if possible.

Sample Preservation

Each sample container will be labeled, placed on ice in an insulated cooler, and chilled to a temperature of approximately 40°F (4°C) and sealed for shipment to the laboratory.

3.4 Potential Asbestos Containing Materials (PACM)

3.4.1 Sample Event Preparation

General Event Preparation

The laboratory performing the sample analysis shall supply labels, custody seals, chain-of-custody forms and shipping forms.

3.4.2 Asbestos Sample Collection

General Sample Collection Information

Representative asbestos samples will be collected for analysis. Evaluation of the sample may be based on visual observation. Before obtaining a bulk sample of Potentially Asbestos Containing Materials (PACM), the area will be restricted to prevent exposure to other personnel.

Sampling Equipment/Procedures

- Prior to collecting a sample, a spray bottle of water will be used to wet the surface of material to be sampled.
- Samples will be collected and placed in clean plastic bags or other clean containers. Three samples for each homogeneous area will be used to confirm the presence of ACM prior to abatement.

Sample Preservation

Each container will be labeled and secured for shipment. Upon selection of samples for analysis, the cooler will be sealed for shipment to the laboratory.

4.0 DOCUMENTATION

4.1 Field Logs

All field notes must be completely and accurately documented to become part of the final report for the project. All field information will be entered on a standard Daily Work Log or Field Screening Log. Example data sheets are provided at the end of this appendix.

4.2 Photographs

Color photographs documenting the sampling locations and visual classification of the sampled media will be maintained as a part of the sampling record. This will include a minimum of four views of the site showing the location of the area of contamination, entrance and exit road and other notable site conditions. Progress photographs will be taken to document:

- Soil/waste removal, handling and sampling,
- unanticipated events,
- contaminated material storage,
- other notable activities, and
- post-construction conditions.

4.3 Sample Numbering System

The sample numbering system will provide a unique identification for each sample collected for screening or analysis. The numbering system will provide a system for numbering replicate samples for laboratory quality assurance purposes and replicate samples will be clearly documented in the Field Screening record. Prominent identification of waste classification samples will be provided for each container from which a sample is collected.

4.4 Sample Documentation

All sample containers will be labeled to prevent misidentification. The following will be indicated on an adhesive label with a waterproof pen:

- Collector's name, date and time of sampling.
- Sample location.
- Depth of Sample (for soil samples).
- Sample Identification number: Including date, sampler's initials and sample number (e.g. 10/6/03-sjh-24).

Field data sheets will be completed daily to document site activities and the results of field screening and sampling.

Chain-of-Custody forms will be used to document samples collected at the site. Proper chain of custody records will be maintained to insure the integrity of the samples and the conditions of the samples upon receipt at the laboratory, including the temperature of the samples at the time of log in.

4.5 Documentation Procedures

Field data, including site conditions, sampling activities, field screening data, waste shipments, etc., will be documented in the Daily Work Log. Daily Work Log sheets will be turned in to the Project Coordinator for review on a weekly basis.

When samples are collected for laboratory analysis the sample collector shall fill in all applicable sections and forward the original chain of custody, with the respective sample(s), to the laboratory performing the analysis. Upon receipt of the samples at the laboratory, the sample coordinator is to complete the chain of custody, make a copy for his/her files, and make the original documents part of the final analytical report.

If corrections to the documentation are required, they will be initialed by the individual making the correction. The date of the revision will also be recorded on the documentation. If appropriate, the reason for the correction will be documented in writing.

5.0 SAMPLE SHIPPING

Samples will be shipped from the field back to the analytical laboratory either by hand delivery or utilizing an overnight courier service. Appropriate samples are to be shipped in sealed insulated shipping containers which maintain the samples at approximately 4°C.

6.0 INVESTIGATION DERIVED WASTE

Investigation Derived Waste (IDW) generated at this project site will be limited to samples collected for field screening or observation of potentially impacted soils. The IDW will be returned to the soil/waste containers at the end of each day of field activity. The containers (with the IDW) will be characterized and shipped off-site for disposal.

7.0 SAMPLING APPARATUS AND FIELD INSTRUMENTATION

Sampling apparatus used may include stainless steel trowels, knives, disposable bailers, and spoons. If necessary, BNC will utilize the following instruments to screen samples of excavated material or monitor employee work areas for hazards.

- Organic Vapor Meter (OVM) equipped with a Photo-ionization Detector and calibration kit.
- Lower Explosive Limit (LEL) Meter equipped with a Dihydrogen Sulfide (H₂S) channel and calibration kit.
- Drager tubes.

8.0 FIELD SAMPLING

As indicated on the RAW project schedule, field sampling activities will begin after:

- The site has been secured;
- A decontamination area has been constructed;
- A first aid station has been installed;
- A project trailer is in place;
- Utilities have been located;
- A source of potable water has been provided; and
- Tall grass and debris have been removed.

Initially asbestos sampling will be performed of all Potentially Asbestos Containing Materials (PACM) using the methods described 3.4 of this plan.

Concurrent to the asbestos sampling, the structural integrity of the above-ground storage tanks will be determined. This analysis will define which tanks, if any, will be removed from the site. Additionally the structural integrity survey will be used to determine if a majority of the liquid waste at the site can be consolidated into one tank or possibly two tanks.

Determination of liquid consolidation will be dependent upon the compatibility analysis that will be performed of the liquids and also the volume of liquid and characteristics of the liquid waste. Several disposal/recycle options will be evaluated and prior to any waste leaving the site the EPA will be notified.

During the structural integrity survey the locations of grossly contaminated soil will be noted and mapped. Prior to any soil removal the EPA OSC will be notified. Since the action is to remove grossly contaminated soil only, no soil sampling will be performed during the RAW. Impacts to the soil not addresses in the RAW will be assessed during the RI/FS portion of the project. Soil will either be properly manifested from the site or placed in properly constructed remediation cells, on-site.

After the structural integrity survey the liquid volumes will be gauged using the methods described in this report and in strict adherence with the Health and Safety Plan. Analytical sampling will include the Flowers Compatibility Test which is described in the RAW.

Depending on the results of the sampling, tank integrity analysis and volume determination, a plan may be provided in the future to transfer liquid from the existing tanks. Also, some tanks may be removed in accordance with the HSP. Prior to removal a demolition plan will be developed with the selected subcontractor.

FIELD DATA SHEETS



FIELD SCREENING

PROJECT NO: _____ PROJECT NAME: _____

SITE LOCATION: _____

DATE: _____ TIME: _____ TO _____

SAMPLE DEPTH	LOCATION	HEADSPACE READING

NOTES: _____

FIELD GEOLOGIST/MGR: _____

BNC DAILY WORK LOG

DAY		DATE	
CONTRACTOR		JOB NAME	
CONTRACTOR		JOB NO.	
Work Performed Today		Weather _____	
		Temp.	AM _____ PM _____
		Safety Meeting	
		Work Force	No.
		Constr. Mgr.	
		Superintendent	
		Geologist	
		Tech.	
		Equip. Operator	
		Drillers	
		Laborers	
		Welders	
Problems-Delays		Pipe Fitters	
		Truck Drivers	
Sub-Contractor Progress			
		Total	
		Heavy Equipment On-Site	
Extra Work	Authorized By		
		Material Purchased	
Small Equipment Rented Today	Rented From	Rate	
Supervisor's Signature			

The Chain of Custody provided by Severn Trent Laboratories is not available in electronic format, but is included in the hard copy version of the Field Sampling Plan.